



# “Management mechanism of agrarian economic system: composition, functions and factors of development in Ukraine”

Nataliia Vdovenko  
Viktoriia Baidala  <https://orcid.org/0000-0002-1532-2913>  
 <https://publons.com/researcher/H-7162-2018>  
Nelya Burlaka  
Anna Diuk

## AUTHORS

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Viktoriiia Baidala, Nelya Burlaka,  
Anna Diuk, 2018

Nataliia Vdovenko, D.Sc.  
(Economics), Professor, National  
University of Life and Environmental  
Sciences of Ukraine, Ukraine.

Viktoriiia Baidala, D.Sc. (Economics),  
Associate Professor, National  
University of Life and Environmental  
Sciences of Ukraine, Ukraine.

Nelya Burlaka, Ph.D. (Economics),  
Vinnitsa National Agrarian  
University, Ukraine.

Anna Diuk, Ph.D. (Economics),  
Vinnitsa National Agrarian  
University, Ukraine.



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Nataliia Vdovenko (Ukraine), Viktoriiia Baidala (Ukraine),  
Nelya Burlaka (Ukraine), Anna Diuk (Ukraine)

# MANAGEMENT MECHANISM OF AGRARIAN ECONOMIC SYSTEM: COMPOSITION, FUNCTIONS AND FACTORS OF DEVELOPMENT IN UKRAINE

## Abstract

The current state of development of Ukraine's national economy involves strengthening the processes of transition to social market economy, aimed at accelerating the rates of economic growth of the country. The presence of peculiarities of activity of agrarian producers and increase of the socioeconomic importance of the agrarian sector of the economy contribute to the need to develop and substantiate the methodological conditions aimed at solving multidimensional and diverse problems of ensuring the development of agrarian economic systems. In the work, the directions of the formation of the mechanism of management of agrarian economic systems, which consist in the transition to a new quality level of the use of information and intellectual resources of the management system on the basis of modern information technologies and modeling, which allowed to develop a structural scheme of the mechanism of management of the agrarian sector of the economy. The understanding of the mechanism of management of agrarian economic systems, factors and functions of this mechanism are determined. The mechanism of management of agrarian economic systems should be considered as a system of principles, rules, norms and procedures, within the framework of which the goals and objectives of the agrarian economy are developed in accordance with the current economic laws. This mechanism should be in line with the ownership of the subjects of state domination of the region, organizational structures of management, market social and economic relations, natural conditions of economic activity and state economic policy concerning the development of agrarian production, etc., and also take into account the main economic relationships that exist between the individual structural components of the agrarian economic system.

## Keywords

management, agrarian economic system, management mechanism, economic development, structure, functions of the agrarian economic system

**JEL Classification** O13, Q19

## INTRODUCTION

The current state of the Ukrainian national economy implies an intensification of the processes of transition to social market economy, aimed at accelerating the rates of economic growth of the country. The presence of specific features in the activities of agrarian producers and the growth of socio-economic importance of the agrarian sector of the economy encourage the development and substantiation of theoretical and practical provisions aimed at solving multifaceted and diverse problems of ensuring the development of the agrarian sector of Ukraine.

In past decades, finding ways to improve management of the agrarian economic systems has increased significantly and will certainly continue to grow. This is confirmed by the experience of advanced economies. As the market relations develop, these problems are all the most

acute in Ukraine. This situation is due to the fact that the agrarian sector is one of the leading sectors of the economy of Ukraine and its economic development depends to a large extent on the economic situation of the country.

The efficiency of the agrarian sector is based on its integration with a number of other sectors of the economy, which include the branches of production of tractors and agricultural machinery, mineral fertilizers and pesticides, fuel oil materials, vehicles, energy carriers, etc. They should also be added to the system of material and technical supply, wholesale and retail enterprises, focused on meeting the needs of agricultural production, repair enterprises, agricultural buildings and other enterprises.

The successful experience of the agrarian industry in the developed countries demonstrates the need for its economic integration with other branches of economy. This was reflected in the formation of the so-called agro-industrial complex (AIC), in which the main tasks of economic integration of the agrarian sector were realized.

Practical demand and scientific relevance of the given problem and purposeful search of effective mechanisms of the sustainable development management by agrarian economic systems have determined the direction of scientific research.

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## 1. LITERATURE REVIEW

Using the method of system analysis, let us analyze such subsystem (component) of the agro-industrial complex as an agrarian economic system (AES).

According to Moldavan (2010), agrarian economic system is a set of independent economic units, ranging from peasant (farmer) farms to regional and interregional agro-industrial associations. This set is integral, its integrity is based on the unification of all economic entities on the principle of the commonality of economic relations in the presence of each of these subjects of a certain economic independence.

Kozlovskiy (2017) determines the main purpose of the agrarian economic system as stable supply of quality agricultural products in sufficient quantities and in a wide range.

The necessity of using modern information technologies in applying the method of a systematic approach to the analysis of agrarian economic systems is indicated by Moiseev (1981) who writes: "System analysis ... requires the analysis of complex information of different physical nature". This allows to use a wide range of mathematical methods, modelling techniques, techniques of information theory, etc. in system analysis. With full confi-

dence, it can be argued about the possibility and, moreover, the need for the use of modern information technology using the method of system analysis for the study of AES, which corresponds to Kamenskiy (1984), that "... systematic explorer yes or otherwise, almost every specialist and leader".

In the opinion of Kozlovskiy (2010), Vdovenko (2015), the following methodological approaches should be based on the formation, operation and improvement of the AES management mechanism:

- the definition of the main objective of the system management and its unconditional priority over the local goals;
- system synthesis, which should be aimed at ensuring the community of the strategic, tactical and operational goals reimplementation of the system, provided that the material, energy, labor and informational resources are effectively used;
- consideration of the system as a whole and as a set of protocols of independent subsystems (constituents);
- the system is a synergistic set of material, energy, information and financial flows, the system provides for its division into objects and subjects of management;

- identification of all significant connections between the subsystems both inside the system and with the external se-field, avoiding unnecessary detail, hierarchical structuring of the system;
- the optimal combination of centralization and decentralization, the priority of functions over the structure of the system;
- accounting uncertainties as an integral attribute of a system;
- accounting of the processes of system development, its variability, transformation and the ability to adapt while maintaining the stability of the system;
- consideration of the system as a set of subsystems with the possibility of including new subsystems and the exclusion of existing ones that already do not correspond to the goals, tasks and functions of the system;
- controlling and informational and analytical support for the maximum number of administrative and technological processes taking place in the system.

Burlaka (2014) notes that the methodological approaches and tools of the system analysis of the AES are differentiated according to the level of their hierarchy, the type of these systems, their content and the state in the time and space aspects, taking into account the existing differences in external conditions.

According to Baltremus (2016), the global goal of the agrarian economic system is to sustainably and reliably meet the public needs of the country in agricultural products in sufficient quantities and assortment, while maintaining high qualitative indicators. Within this goal, the main goals of each agrarian economic system are formulated, and on the basis of them – local goals. Also global and local criteria for the effectiveness of the agrarian economic system are determined. It is necessary to pay attention to the requirement to ensure a certain stability of the target and functional purpose of the studied systems. This is due, first of all, to the peculiarities of agricultural production, which often

requires considerable time periods to change the direction of its main activity. Local goals and criteria for the effectiveness of the agrarian economic system should be as flexible as possible within the limits defined by the main goals and functional purpose of the given agrarian economic system.

Kozlovskiy (2017) had proved that in connection with the growing complexity of modern agrarian economic systems and the diversity of interactions between their subsystems of different levels and with the external environment, as well as the level of achievements of scientific and technical progress and accumulation of the necessary information resource, the role of quantitative and qualitative economic and mathematical methods of modelling and forecasting, which are based on the use of wide opportunities of modern information technologies, will constantly grow.

Maciejczak (2015) argues that from the point view of systematic approach, agrarian economy is a phenomenon, which has a positive impact on the environment and society and economy as a whole by applying the innovative technologies in traditional branches, for example, in food.

The purpose of this work is to theoretically study the conceptual approaches to the management of the Ukrainian agrarian economic system, to define functions, development factors of the Ukrainian agrarian economic system.

## 2. GOAL AND RESEARCH METHODOLOGY

The methodological foundations of the study include the conceptual foundations of the theory of management, the concept of dialectical logistics, the study of Ukrainian and foreign scientists in the field of economic and agrarian management, the use of strategic management methods to describe the functions of the mechanism of management of agrarian economic systems.

The research used the following methods: expert assessments – in assessing the factors of influence on the development of the agrarian sector; systemic – in studying the principles of development of agrarian economic systems; synthesis, analysis, grouping

– in determining factors of influence and substantiation of the choice of factors influencing agrarian economic systems; abstraction – in determining the factors of the mechanism of management of agrarian economic systems; generalization – in developing a methodology for managing the development of the agrarian economic systems.

### 3. MAIN RESULTS OF RESEARCH

The main purpose of the agrarian economic system is to provide the population with sufficient quantity and the assortment of agricultural products with the necessary qualitative indicators. In general, the AES consists of eight subsystems:

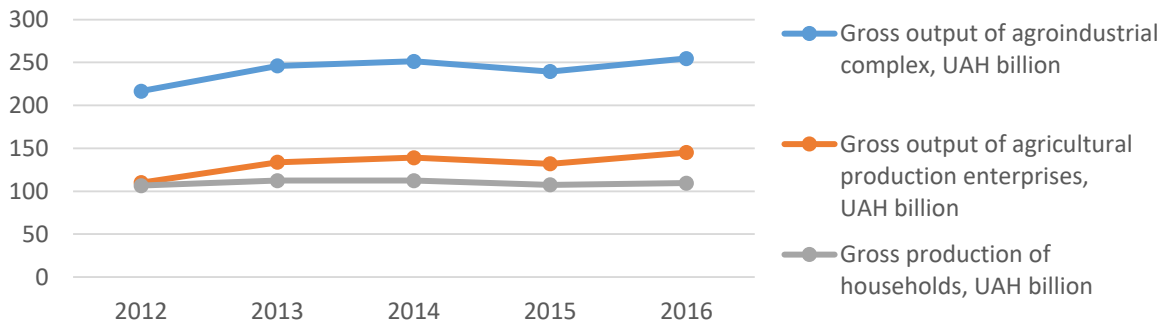
1. A subsystem of the first order is a separate worker, or more specific, according to (Kravchenko, 1978), “a worker who has certain skills, qualifications, experience, the objects of labour he is working on; production algorithm”. In the study of AES management problems, this subsystem can be understood as an integral element. However, in our opinion, as an “early date” of an indivisible element of the AES it is expedient to consider an employee of the agricultural production cycle.
2. Subsystems of the second level – these are labor collectives, which consist of several subsystems of the first level. These subsystems perform more complex functions within the complete technological stages of agrarian production. These include primary labor collectives of specialized agricultural producers, peasant (farmer) farms, in which labor processes are carried out by two or more persons specializing in the production of certain types of agricultural products, and so on.
3. Subsystems of the third level are peasant (farmer) farms, cooperatives, which include subsystems of the second level. Systems of this level should be similar to the types of products produced by them, as well as methods for the implementation of basic production functions.
4. Subsystems of the fourth level are structural elements with more complex functions than

at the previous level and which, as a rule, are not limited to one type of activity: brigades, branches, cooperatives (Drabovskiy, 2011), as well as peasant (farmer) farms that employ hired labor, and so on.

5. Subsystems of the fifth level is an association of systems of the previous levels: agricultural of various organizational-legal forms (joint stock products, agricultural companies, etc.).
6. Subsystems of the sixth level are inter-branch and territorial associations of district and regional scale (agrarian holdings, associations of peasant (farmer) farms, etc.).
7. Subsystems of the seventh level – regional agrarian structures (or agro-structures of regional scale).
8. Subsystems of the light level are interregional (national) agrarian economic entities.

The mandatory components of any system, in addition to its components (subsystems), must necessarily include links between these subsystems, the stability and effectiveness of which are equally important for the development of a recommendation to ensure the sustainability of the economic system.

In modern conditions, the methodology of systematic research of agrarian economic systems cannot be limited to material, energy, financial relationships. A special role in the study of agrarian systems lies in the information links. And it's not just that information flows are a reflection of the material, energy and financial flows. It should be borne in mind that in connection with the active development of IT technologies, information flows increasingly focus on the research of various problems of modern society, while playing not only intermediate, but also often an independent role. Today, information communications play an integrative and generalizing role in management. They allow to group individual subsystems into a single organized system. Only with their use coordination and effective interaction of all independent subsystems (components) of any system are possible. Information communications should reflect the changing state of both the AES itself and the environment at the same time, thus ensuring that



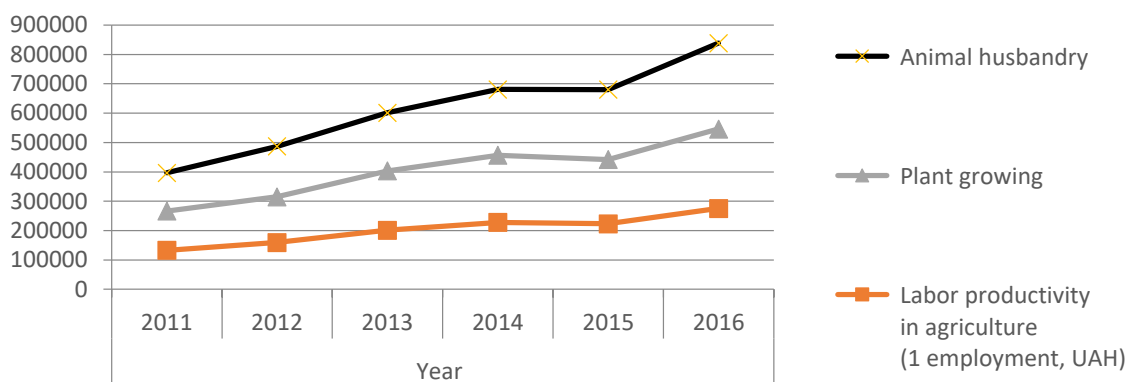
**Figure 1.** Volume of gross agricultural production (in comparable prices in 2012, UAH billion) in Ukraine

the subject of the management of the system is able to respond adequately and timely to these changes.

The main indicator of the development of the agrarian economic system of the country is the indicator of gross agricultural production in Ukraine (Figure 1). In 2013, the change in the gross agricultural output in all categories of farms compared to 2012, which was calculated as the base one, was 29.5%, in 2014 compared with the base year 2012 – 34.8%, in 2015 compared with the base year 2012 – 22.9%; in 2016 compared with the base year 2012 – 38%, which indicates that the Ukrainian agricultural sector is in a state of development and there are not enough data on the deterioration of the basic economic index of its activities (Official site of the State Statistics Committee of Ukraine). At the same time, the study of the pace of growth of the agrarian sector is of considerable interest, since its low growth rates may indicate the presence of the influence of certain negative factors, which in turn may jeopardize the economic security of the entire agrarian sector.

An indicator of the description of agrarian economic systems is also an indicator of productivity. Labor productivity is one of the most important economic categories, in which the effectiveness of social production is most fully reflected in the efficiency of the use of labor, land, logistical and financial resources. The increase of labor productivity is one of the decisive factors for the development of agrarian production, and, based on this, ensuring a significant improvement in the material well-being of the Ukrainian people and the implementation of social transformations in the countryside (Chorna, 2013).

Figure 2 shows the dynamics of productivity growth in the agrarian sector of Ukraine. It can be argued that labor productivity is increasing steadily both in livestock production (70.3%) and plant growing (74.1%). These facts can be interpreted as a gradual transition of the agrarian sector of Ukraine to an intensive development path, which is one of the factors contributing to increasing the level of development of the agrarian economic system in general.



**Figure 2.** Labor productivity in the agrarian sector of Ukraine

A necessary condition for ensuring the effective functioning of the agrarian economic system is the creation and steady operation of its management mechanism.

“Mechanism of management” is a quite often mentioned and used category, the meaning of which is unambiguously not defined (Kaletnik, Zabolotnyi, & Kozlovskiy, 2011). The most widespread is the notion that the control mechanism is understood as the system of principles, rules, norms and procedures that determine the order and content of management activity. Particularly important is the perception of the management mechanism as a system that uses the system approach as the basis for its research. That is, the mechanism of management of the economic system is a complex hierarchical system that determines the internal structure, the procedure for the formation and functioning of the management system in accordance with the adopted methodology of management.

The following methodological approaches should be based on the formation, operation and improvement of the AES management mechanism (Kozlovskiy, 2017):

- definition of the main goal of the management of the system and its unconditional prioritization over local goals;
- the synthesis of the system, which should be aimed at ensuring the coherence of the implementation of strategic, tactical and operational goals in ensuring the effective use of material, energy, labor and information resources;
- consideration of the system as a whole and as a set of separate independent subsystems (constituents);
- the system is a synergistic set of material, energy, information and financial flows;
- the system provides for its division into objects and subjects of management;
- identification of all significant connections between subsystems both inside the system and in the external environment;

- avoiding excessive detail;
- hierarchical structuring of the system;
- an optimal combination of centralization and decentralization;
- the priority of functions over the structure of the system;
- accounting uncertainties as an integral attribute of a system;
- accounting of the processes of system development, its variability, transformation and the ability to adapt while maintaining the stability of the system;
- consideration of the system as a set of subsystems with the ability to include new modules and exclude the existing ones that already do not correspond to the objectives and functions of the system;
- controlling and informational-analytical support for the maximum possible number of managerial and technological processes.

The methodological approaches and tools of the system analysis of the AES are differentiated according to the level of their hierarchy, the type of these systems, their content and the state in the time and space aspects, taking into account the existing differences in external conditions. Let's consider formulated methodological approaches to system analysis of AES in detail from the standpoint of agrarian production.

The global aim (Baltremus et al., 2016; Mescon, Albert, & Khedouri, 1988) for AES is to sustainably and reliably meet the public needs of agricultural products in sufficient quantities and assortment while maintaining high qualitative indicators. Within this goal, the main objectives of each AES are formulated and based on local goals, and the global and local criteria for AES efficiency are formulated. It is necessary to pay attention to the requirement to ensure a certain stability of the target and functional purpose of the studied systems. This is due, first of all, to the particular features of agricultural production, which often requires

considerable time periods to change the direction of its core activity. Local same criteria and criteria should be as flexible as possible within the limits defined by the main-goals and functional purpose of the controlled AES.

For the agrarian sector, the mechanism of management of the AES should meet both the general for economic systems of the laws and the specifics of agrarian production. In general, such a concept of the management mechanism of agrarian economic systems is shown in Figure 3.

The mechanism of management of agrarian economic systems should be considered as a system of principles, rules, norms and procedures, within the framework of which the goals and objectives of the agrarian economic system are realized in accordance with economic laws that determine its existence and development. The mechanism of management of agrarian economic systems must be consistent with a systemically agreed set of factors – form of ownership, organizational structure of production, market social and economic relations, native conditions of management and state policy in relation to agriculture. The management mechanism is a system where components (elements) are first and foremost combined by certain economicrelationship.

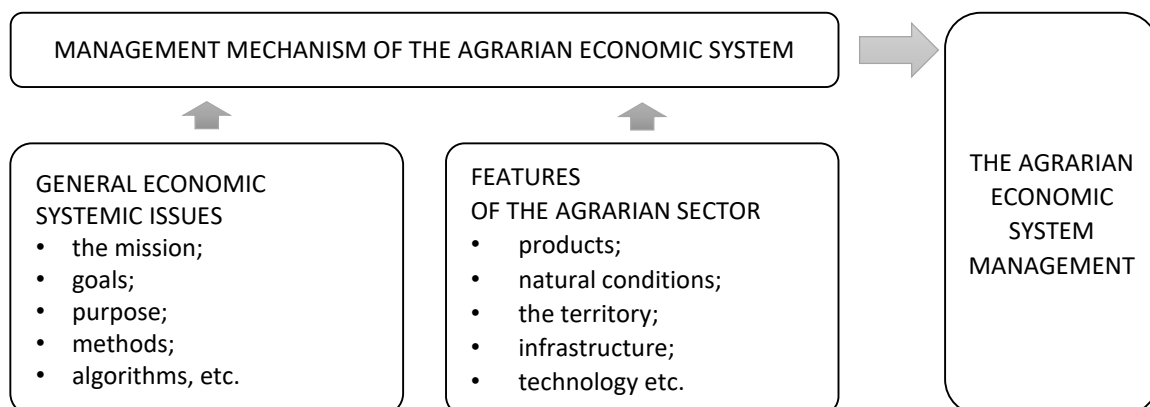
The realities of modern market economy and the level of social development emphasize the informational and intellectual components of the mechanism of management of agrarian economic systems to ensure its sustainable development.

This is manifested in the fact that management is primarily a glass-bottom system of information processes. Such views on the place of information in management are followed by many scientists, in particular, Vikhanski and Naumov (2002) who argues: “At present, the role of the information-behavioral subsystem of the management system is increasing dramatically”. According to Kuznetsov (2003), among the subject of the science of management, information is in the first place.

The main factors that determine the mechanism of management of agrarian economic systems are shown in Figure 4.

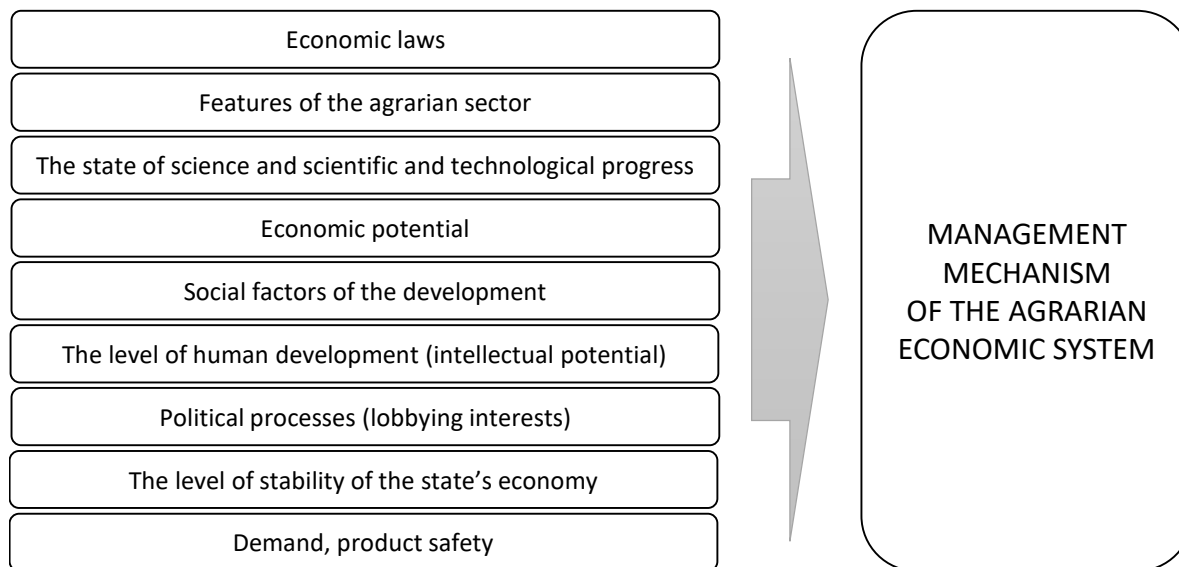
The current state of the economy of Ukraine and its agrarian sector is characterized by an ever-increasing dynamism of all socioeconomic processes, a complication of the system of economicrelationship, resource constraints, demographic and environmental problems, increased competition, etc., which urges the need for purposeful work with large volumes of information and leads to multivariateness and uncertainty in the development and realization of managerial influences. All this complicates the management of agrarian economic systems. The natural consequence of this is an increase in the share of the intellectual component in management activity due to the vital importance of the purposeful work with a variety of information, the volume of which is constantly increasing.

Based on the foregoing, the following tasks should be attributed to tasks and functions solved within



**Figure 3.** The structure of the agrarian economic systems management



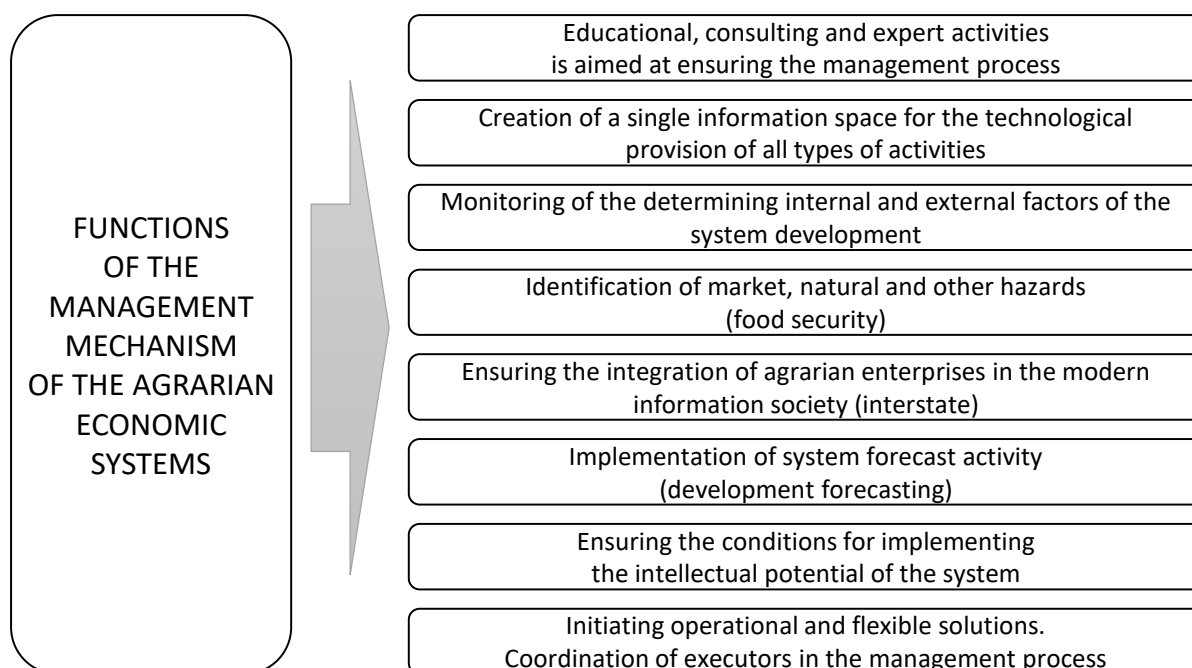


**Figure 4.** Factors of management mechanism of the agrarian economic systems

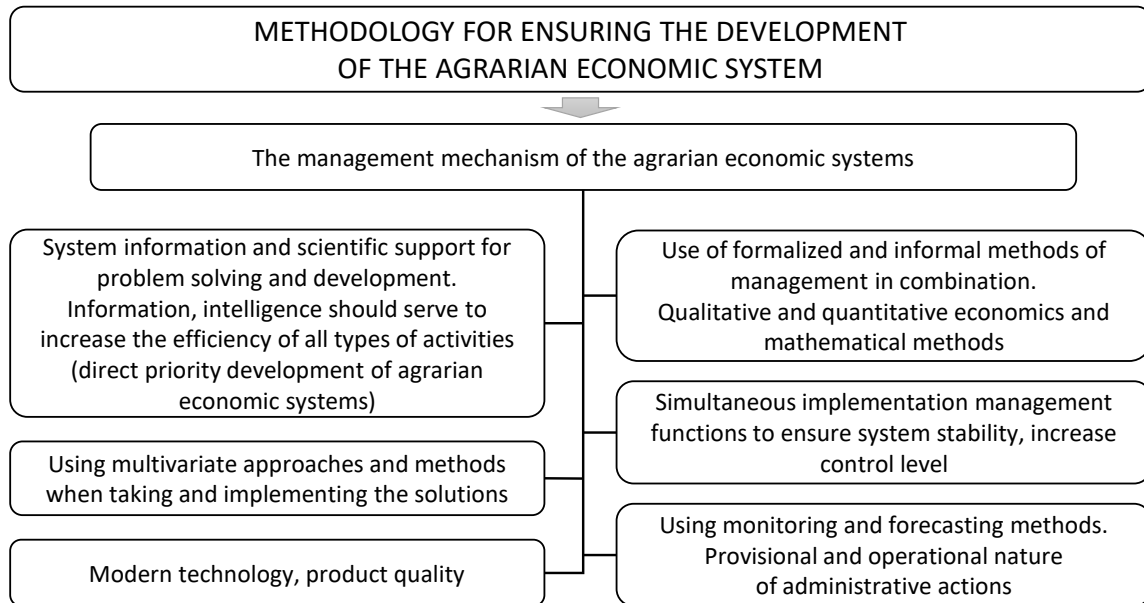
the information and analytical block of the mechanism of management of agrarian economic systems (see Figure 5) (World Bank, 1997).

The separation of these functions, shown in Figure 5, is mainly due to methodological considerations and quite arbitrary in nature, since their effective use can only be carried out in an inseparable system of aggregates.

Thus, to ensure the development of the agrarian sector (Kozlovskiy, Herasymenko, & Kozlovskiy, 2010), efficient management of the agrarian economic system is essential for the creation of management mechanism implemented in the form of an integrated automated control system oriented towards a new level of use of information, tools and methods based on the achievements of AES (see Figure 6).



**Figure 5.** Functions of the management mechanism of the agrarian economic systems

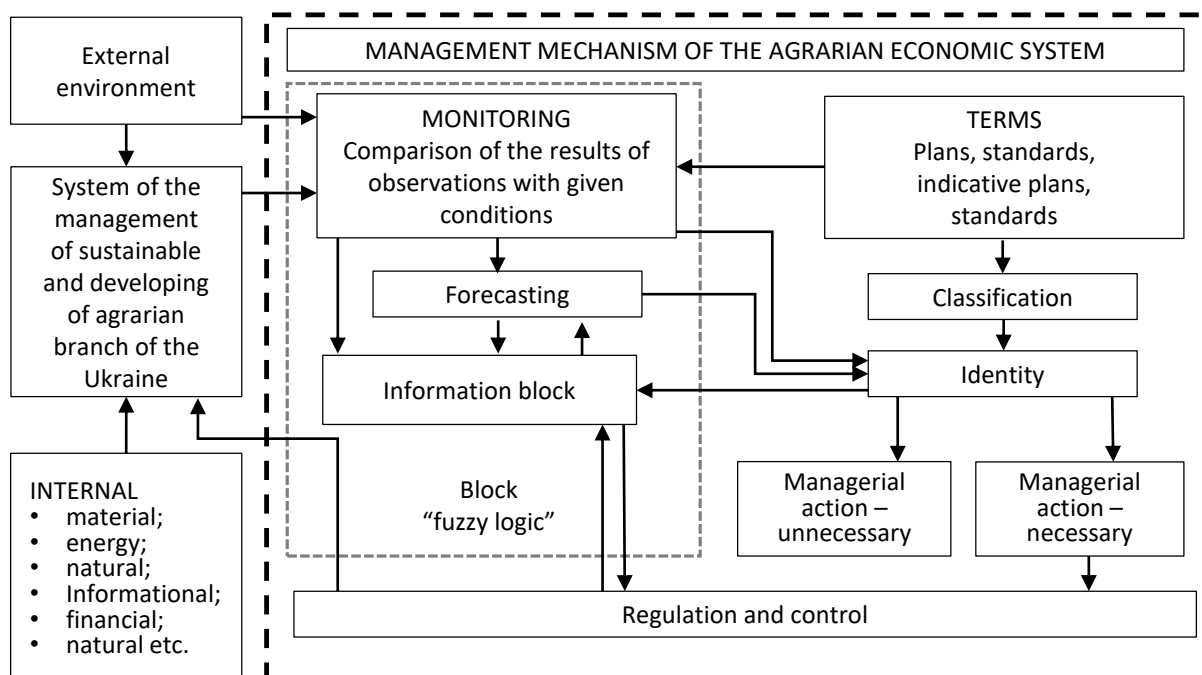


**Figure 6.** The methodology of the development of the agrarian economic system

The complexity of solving these problems is that many indicators of the agrarian sector are of a qualitative nature, and the criteria of comparison are the vector with a large number of diverse combinations. Measuring quantitative indicators of the state of the agrarian economic system is not always easy enough in practical implementation. Therefore, in order to solve the above problems, we propose to use the theory of fuzzy logic (Kozlovskiy, 2017).

The block diagram of the mechanism of management of the agrarian sector, presented in the form of the agrarian economic system, which provides for the sustainability of its development, can be presented as follows (see Figure 7).

Analyzing the structural diagram of management mechanism of the agrarian economic system, shown in Figure 7, it should be noted that such a function



**Figure 7.** The structural diagram of the management mechanism of the agrarian economic system

as prediction and research of seasonal and cyclic manifestations of agrarian production falls within the competence of the settlement and analytical unit of the management system of the agrarian economic system, although such control (lack of reliable information, complexity of control, etc.) is carried out not on all controlled indicators.

An important point in developing the management mechanism of the agrarian economic system is that all significant stages of the implementation of the control function are fixed in the information block of the management system with a view to the possible use of the results of control in subsequent management activities, for example, to forecast the results of the agrarian economic system (the so-called prognostic control).

The most important function in this management mechanism of the agrarian economic system is the planning function.

Planning function is intended to systematically reduce and overcome uncertainties about the goals, functions, structure, properties and laws of the functioning and development of the agrarian economic system. Typically, the implementation of this function is divided into two main parts:

- a. statement and justification of goals – it is a promising, strategic planning;
- b. development of ways to achieve the chosen goals – it is tactical (long-term, operational, current) planning.

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## CONCLUSION

Since the agrarian economic systems are among the most complex systems, multicriterial nature of the management tasks is inevitable. In such cases, a generalized system quality indicator, represented in the form of a vector, where coordinates are indicators of the individual properties of the system, should be used. Such an approach has not yet been widespread. As a rule, managers use a certain set of criteria without putting or solving the problem of multi-criteria optimization. And this can lead to violation of the study system. Summarizing this study, the following conclusions can be drawn:

1. Agrarian economic systems include a wide range of economic entities from peasant (farmer) farms to interregional agrarian economic structures. Characteristic features of the NPP are the affiliation of the AIC and the fact that their integrity is based on the unification of subsystems (elements) of the common economic relations in the presence of certain economic autonomy.
2. The mechanism of management of agrarian economic systems should be considered as a system of principles, rules, norms and procedures, within the framework of which the goals and objectives of the agrarian economic system are realized in accordance with economic laws that determine its existence and development. The mechanism of management of agrarian economic systems must correspond to a systematically agreed set of factors – ownership, organizational structure of production, market social and economic relations, natural conditions of economic activity and state policy in relation to agriculture.

It should be emphasized that the formation and functioning of the management mechanism of the agrarian economic systems and their constituents affect the composition and correlation of management functions, their distribution, content and methods of implementation. That is, the construction of the management mechanism of the agrarian economic systems is directly related to the development of its functional content. Therefore, we consider the functions of management of the agrarian economic systems, taking into account the peculiarities of agricultural production, and from the point of view of building the management mechanism of the agrarian economic systems on the basis of reorientation of management to a new qualitative level that involves the realization of intellectual and informational resources with the maximum possible use of modeling methods and modern information technologies. This involves conducting continuous monitoring and analysis of changes in the composition, proportion and content of management functions of the agrarian economic systems.

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